

Claims

[c1] 1. A method for charging in a data communications network, the network comprising a User, a Service Provider that provides at least one service, and an Accounting Manager, the method comprising the steps of:

- sending by the Accounting Manager a service credential to the User;
- sending by the Accounting Manager a user credential to the Service Provider;
- requesting by the User a service from the Service Provider, using information from the service credential;
- validating by the Service Provider the request for a service, using information from the user credential;
- initiating the service; and
- sending by the Service Provider an accounting message relating to the service to the Accounting Manager.

[c2] 2. The method according to claim 1, further comprising, prior to the step of sending by the Service Provider an accounting message relating to the service to the Accounting Manager, the step of terminating the service.

[c3] 3. The method according to claim 2, wherein the accounting message is a Final accounting message, and the method further comprises, prior to the step of terminating the service, the step of sending by the Service Provider at least one Interim accounting message relating to the service to the Accounting Manager.

[c4] 4. The method according to claim 1, wherein the network further comprises an Accounting Storage, and the method further comprises, after the step of sending by the Service Provider an accounting message relating to the service to the Accounting Manager, the step of sending from the Accounting Manager to the Accounting Storage a Record Accounting message comprising accounting data.

[c5] 5. The method according to claim 4, further comprising the steps of:

- storing by the Accounting Storage the accounting data from the Record Accounting message;
- sending by the Accounting Storage an Acknowledgement to the Accounting Manager; and
- upon reception of the Acknowledgement, deleting by the Accounting Manager the

accounting data it sent to the Accounting Storage in the Record Accounting message.

- [c6] 6.The method according to claim 1, further comprising, prior to the step of sending by the Accounting Manager a service credential to the User, the steps of:
 - selecting by the User a service;
 - sending by the User a service credential request related to the selected service to the Accounting Manager; and
 - validating by the Accounting Manager the service credential request.
- [c7] 7.The method according to claim 6, wherein the service credential request comprises:
 - an indication of a requested service;
 - a unique request identifier;
 - a random number; and
 - an electronic signature.
- [c8] 8.The method according to claim 7, wherein the service credential comprises:
 - the unique request identifier;
 - an address of the Service Provider;
 - an electronic key;
 - an accounting session identifier; and
 - an electronic signature.
- [c9] 9.The method according to claim 8, wherein the service credential further comprises:
 - a validity period for the service credential.
- [c10] 10.The method according to claim 8, wherein the service credential further comprises:
 - at least one condition for use of the credential.
- [c11] 11.The method according to claim 8, wherein the user credential comprises:
 - an address of the User;
 - the accounting session identifier;
 - an electronic key; and

- an electronic signature.

[c12] 12.The method according to claim 11, wherein the user credential further comprises policies regarding service access and accounting.

[c13] 13.The method according to claim 11, wherein the step of requesting by the User a service from the Service Provider further comprises sending from the User a service request to the Service Provider, wherein the service request comprises:

- the address of the user;
- the accounting session identifier; and
- an electronic signature.

[c14] 14.The method according to claim 1, wherein the accounting message comprises:

- an identifier of the service;
- an indicator that the message comprises accounting data;
- the user credential;
- a unique accounting message identifier;
- an accounting session identifier;
- accounting data; and
- an electronic signature.

[c15] 15.A system for charging in a data communications network, the system comprising:

- an Accounting Manager that:
 - sends a service credential to the User; and
 - sends a user credential to the Service Provider;
- a User that requests a service from the Service Provider, using information from the service credential; and
- a Service Provider that provides at least one service and that:
 - validates the service request, using information from the user credential; and
 - sends an accounting message relating to the service to the Accounting Manager.

[c16] 16.The system according to claim 15, wherein the accounting message is a Final accounting message, and wherein the Service Provider further sends at least one Interim accounting message relating to the service to the Accounting Manager.

[c17] 17.The system according to claim 15, wherein the system further comprises an Accounting Storage, and the Accounting Manager further sends a Record Accounting message comprising accounting data to the Accounting Storage.

[c18] 18.The system according to claim 17, wherein:

- the Accounting Storage:
- stores the accounting data from the Record Accounting message; and
- sends an Acknowledgement to the Accounting Manager; and
- the Accounting Manager further deletes the accounting data it sent to the Accounting Storage in the Record Accounting message upon reception of the Acknowledgement.

[c19] 19.The system according to claim 15, wherein the User further selects a service and sends a service credential request related to the selected service to the Accounting Manager, and the Accounting Manager further validates the service credential request prior to sending the service credential to the User.

[c20] 20.The system according to claim 19, wherein the service credential request comprises:

- an indication of a requested service;
- a unique request identifier;
- a random number; and
- an electronic signature.

[c21] 21.The system according to claim 20, wherein the service credential comprises:

- the unique request identifier;
- an address of the Service Provider;
- an accounting session identifier;
- an electronic key; and
- an electronic signature.

[c22] 22.The system according to claim 21, wherein the service credential further comprises:

- a validity period for the service credential.

[c23] 23.The system according to claim 21, wherein the service credential further

comprises:

- at least one condition for use of the credential.

[c24] 24.The system according to claim 21, wherein the user credential comprises:

- an address of the User;
- an accounting identifier;
- an electronic key;
- the accounting session identifier; and
- an electronic signature.

[c25] 25.The system according to claim 24, wherein the user credential further comprises policies regarding service access and accounting.

[c26] 26.The system according to claim 24, wherein the User requests a service from the Service Provider by sending to the Service Provider a service request comprising:

- the address of the user;
- the accounting session identifier; and
- an electronic signature.

[c27] 27.The system according to claim 15, wherein the accounting message comprises:

- an identifier of the service;
- an indicator that the message comprises accounting data;
- the user credential;
- a unique message identifier;
- accounting data; and
- an electronic signature.

[c28] 28.The system according to claim 15, wherein the User further initiates the requested service.

[c29] 29.The system according to claim 15, wherein the Account Manager further initiates the requested service.

[c30] 30.A User node in a data communications network that further comprises a Service Provider and an Accounting Manager, the User node comprising:

- a communication unit that:

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- receives a service credential from the Accounting Manager; and
- requests a service from the Service Provider, using information from the service credential.

[c31] 31.The User node according to claim 30, wherein the communication unit further sends a service credential request to the Accounting Manager.

[c32] 32.The User node according to claim 30, wherein the User node further comprises a processing unit that activates the requested service.

[c33] 33.An Accounting Manager in a data communications network that further comprises a User and a Service Provider, the Accounting Manager comprising:

- a communication unit that:
- sends a service credential to the User;
- sends a user credential to the Service Provider; and
- receives an accounting message from the Service Provider.

[c34] 34.The Accounting Manager according to claim 33, wherein the accounting message is a Final accounting message and the communication unit further receives at least one Interim accounting message from the Service Provider.

[c35] 35.The Accounting Manager according to claim 33, wherein the data communications network further comprises an Accounting Storage, and the communication unit further sends a Record Accounting message comprising accounting data to the Accounting Storage.

[c36] 36.The Accounting Manager according to claim 35, wherein the communication unit further receives an Acknowledgement from the Accounting Storage, and the Accounting Manager further comprises a processing unit that, upon reception of the Acknowledgement, deletes the accounting data it sent to the Accounting Storage in the Record Accounting message.

[c37] 37.The Accounting Manager of claim 33, wherein the communication unit further receives a service credential request from the User, and the Accounting Manager further comprises a processing unit that validates the service credential request prior to sending the service credential to the User

[c38] 38.A Service Provider providing at least one service in a data communications network that further comprises a User and an Accounting Manager, wherein the Service Provider:

- comprises a communication unit that:
- receives a user credential from the Accounting Manager;
- receives a request for a service from the User; and
- sends an accounting message relating to the service to the Accounting Manager.

[c39] 39.The Service Provider according to claim 38, wherein accounting message is a Final accounting message and the communication unit further sends at least one Interim accounting message relating to the service to the Accounting Manager.

[c40] 40.The Service Provider according to claim 38 further comprising a processing unit that activates the requested service.

[c41] 41.The Service Provider according to claim 40, wherein the processing unit further validates the request for a service.

[c42] 42.A system for charging in a data communications network further comprising a User, the system comprising:

- an Accounting Manager that:
- sends a service credential to the User;
- sends a user credential to the Service Provider; and
- receives a request for a service from the User; and
- a Service Provider that provides at least one service and that:
 - validates the service request, using information from the user credential; and
 - sends an accounting message relating to the service to the Accounting Manager.

[c43] 43.The system according to claim 42, wherein the accounting message is a Final accounting message, and wherein the Service Provider further sends at least one Interim accounting message relating to the service to the Accounting Manager.

[c44] 44.The system according to claim 42, wherein the system further comprises an Accounting Storage, and the Accounting Manager further sends a Record Accounting message comprising accounting data to the Accounting Storage.

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[c45] 45.The system according to claim 44, wherein:

- the Accounting Storage:
- stores the accounting data from the Record Accounting message; and
- sends an Acknowledgement to the Accounting Manager; and
- the Accounting Manager further deletes the accounting data it sent to the Accounting Storage in the Record Accounting message upon reception of the Acknowledgement.

[c46] 46.The system according to claim 42, wherein the Accounting Manager further:

- receives from the User a service credential request related to service selected by the User; and
- validates the service credential request prior sending the service credential to the User.

[c47] 47.The system according to claim 46, wherein the service credential request comprises:

- an indication of a requested service;
- a unique request identifier;
- a random number; and
- an electronic signature.

[c48] 48.The system according to claim 47, wherein the service credential comprises:

- the unique request identifier;
- an address of the Service Provider;
- an accounting session identifier;
- an electronic key; and
- an electronic signature.

[c49] 49.The system according to claim 48, wherein the service credential further comprises:

- a validity period for the service credential.

[c50] 50.The system according to claim 48, wherein the service credential further comprises:

- at least one condition for use of the credential.

- [c51] 51.The system according to claim 48, wherein the user credential comprises:
 - an address of the User;
 - an accounting identifier;
 - an electronic key;
 - the accounting session identifier; and
 - an electronic signature.
- [c52] 52.The system according to claim 51, wherein the user credential further comprises policies regarding service access and accounting.
- [c53] 53.The system according to claim 51, wherein the request for a service is a service request comprising:
 - the address of the user;
 - the accounting session identifier; and
 - an electronic signature.
- [c54] 54.The system according to claim 42, wherein the accounting message comprises:
 - an identifier of the service;
 - an indicator that the message comprises accounting data;
 - the user credential;
 - a unique message identifier;
 - accounting data; and
 - an electronic signature.
- [c55] 55.The system according to claim 42, wherein the Account Manager further initiates the requested service.